

### **LISTING OF CLAIMS**

The following listing of claims replaces all prior versions of the claims.

1 to 166. Cancelled

167. (Currently amended) An isolated polynucleotide ~~comprising a sequence~~ encoding a polypeptide comprising amino acid residues from position 220 to position 749 of SEQ ID NO: 2, wherein the polypeptide has cellulose synthase activity.

168. (Previously presented) The polynucleotide of claim 167, wherein the polypeptide comprises SEQ ID NO: 2.

169. (Currently amended) The polynucleotide of claim 167, wherein the polynucleotide comprises nucleotides from position 660 to position 2250 of SEQ ID NO: 1.

170. (Currently amended) An isolated polynucleotide ~~comprising a sequence~~ encoding a polypeptide consisting essentially of a ~~comprising the~~ UDP-glucose binding domain of SEQ ID NO: 5.

171. (Currently amended) A polynucleotide encoding a ~~The polynucleotide of claim 170,~~ wherein the polypeptide consisting essentially of ~~comprises~~ SEQ ID NO: 5.

172. (Currently amended) ~~The~~ A polynucleotide of claim 170, ~~wherein the polynucleotide consisting essentially of~~ ~~comprises~~ nucleotides 2 to 3244 of SEQ ID NO: 4.

173. (Currently amended) A transgenic plant cell comprising an exogenous polynucleotide encoding a polypeptide comprising amino acid residues from position 220 to position 749 of SEQ ID NO: 2, wherein the polypeptide has cellulose synthase activity.

174. (Currently amended) A transgenic plant comprising the plant cell of claim 173.

175. (Currently amended) The transgenic plant of claim 174, wherein the plant is a tree.

176. (Currently amended) A transgenic plant cell comprising an exogenous polynucleotide encoding a polypeptide consisting essentially of ~~comprising~~ the UDP-glucose binding domain of SEQ ID NO: 5.

177. (Currently amended) A transgenic plant comprising the cell of claim 173.

178. (Currently amended) A transgenic plant of claim 174, wherein the plant is a tree.

179. (Currently amended) A vector comprising a an isolated polynucleotide ~~comprising a sequence~~ encoding a polypeptide comprising amino acid residues from position 220 to position 749 of SEQ ID NO: 2, wherein the polypeptide has cellulase synthase activity and wherein the polynucleotide coding sequence ~~is~~ operably associated with a promoter sequence functional in a plant.

180. (Currently amended) A transgenic plant cell comprising the vector of claim 179.

181. (Currently amended) A vector comprising a polynucleotide sequence encoding a polypeptide consisting essentially of ~~comprising~~ SEQ ID NO: 5, wherein the coding sequence is operably associated with a promoter sequence functional in a plant.

182. (Currently amended) A transgenic plant cell comprising the vector of claim 181.

183. (Currently amended) A method ~~for~~ of producing a transgenic plant cell comprising introducing into ~~expressing in the plant~~ cell an exogenous polynucleotide ~~comprising a sequence~~ encoding a polypeptide consisting essentially of a UDP-glucose binding domain of a cellulose synthase, wherein the UDP-glucose binding domain corresponds amino acid residues from position 220 to position 749 of SEQ ID NO: 2.

184. Cancelled

185. (Currently amended) ~~A~~The method for producing a transgenic plant cell comprising introducing into the plant cell an exogenous polynucleotide encoding a polypeptide

consisting essentially of a UDP-glucose binding domain of a cellulose synthase of claim 184,  
wherein the ~~Populus~~-cellulose synthase is SEQ ID NO: 2.

186. Cancelled

187. (Previously presented) The method of claim 183, wherein the coding sequence is operably associated with a promoter.

188. (Currently amended) The method of encoding a polypeptide consisting essentially of a UDP-glucose binding domain of a cellulose synthase claim 186, wherein the polynucleotide comprises nucleotides from position 660 to position 2250 of SEQ ID NO: 1.

189. Cancelled

190. (Currently amended) ~~A~~The method of producing a transgenic plant cell comprising introducing into the plant cell an exogenous polynucleotide encoding a polypeptide consisting essentially of a UDP-glucose binding domain of a cellulose synthase ~~claim 189,~~ wherein the UDP-glucose binding domain consists essentially of *Arabidopsis*-cellulose synthase ~~comprises~~ SEQ ID NO: 5.

191. (Previously presented) The method of claim 183, wherein the polynucleotide is expressed in the sense orientation.

192. (Previously presented) The method of claim 183, wherein the polynucleotide is expressed in the anti-sense orientation.

193. (Currently amended) A method of producing a transgenic plant cell comprising introducing into ~~expressing in the plant~~ cell an exogenous polynucleotide encoding a polypeptide comprising amino acids from position 220 to position 749 of SEQ ID NO: 2, wherein the polypeptide has cellulose synthase activity.

194. (Previously presented) The method of claim 193, wherein the polypeptide comprises SEQ ID NO: 2.

195. (Currently amended) The method of claim 193, wherein the polynucleotide comprises nucleotides from position 660 to position 2250 ~~through~~ of SEQ ID NO: 1.

196. (Currently amended) The of claim 194, wherein the polynucleotide comprises nucleotides from position 69 to position 3005 of SEQ ID NO: 1.

197. (Currently amended) The method of claim 193, wherein the polynucleotide comprises SEQ ID NO: 1.

198. (Previously presented) The method of claim 193, wherein the polynucleotide is expressed in the sense orientation.

199. (Previously presented) The method of claim 193, wherein the polynucleotide is expressed in the anti-sense orientation.

200. (Currently amended) A method for producing a transgenic plant cell comprising introducing into ~~expressing in~~ the plant cell an exogenous polynucleotide sequence encoding a polypeptide consisting essentially of ~~comprising~~ SEQ ID NO: 5.

201. (Currently amended) A method for producing a transgenic plant comprising introducing into the plant an exogenous polynucleotide sequence ~~The method of claim 200,~~ wherein the polynucleotide sequence consists essentially of ~~comprises~~ nucleotides 2-3244 of SEQ ID NO: 4.

202. (Previously presented) The method of claim 200, wherein the polynucleotide is expressed in the sense orientation.

203. (Previously presented) The method of claim 200, wherein the polynucleotide is expressed in the anti-sense orientation.

204. (New) A method for producing a transgenic plant comprising introducing into the plant an exogenous polynucleotide encoding a polypeptide comprising amino acid residues from

position 220 to position 749 of SEQ ID NO: 2, wherein the polypeptide has cellulose synthase activity.

205. (New) A transgenic plant comprising the vector of claim 179.

206. (New) The transgenic plant of claim 205, which is a tree.